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### **A Surrogate Modeling And Adaptive Sampling Framework For Black-box Optimization Problems**

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#### **Abstract:**

New techniques that couple machine learning and optimization have been introduced to solve expensive black-box optimization problems, namely surrogate-based modeling and optimization. In this work, we present a surrogate-based modeling and adaptive sampling framework for solving black-box optimization problems. We have implemented a plethora of methods in each step of the framework: (i) initial sampling techniques, (ii) surrogate models, and (iii) adaptive sampling techniques. We present extensive computational results on continuous and mixed-integer optimization problems and review the performance of the various design choices.

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**Topic (Complete):** Optimization ; Deep Learning/Maching Learning ; Global Optimization

**Additional Information (Complete):**

**Practice related?:** No

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